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Methods *for* Disaster Mental Health Research

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CHAPTER 3

Choosing Research Methods to Match Research Goals in Studies of Disaster or Terrorism

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Ten different researchers investigating the same disaster might come up with 10 very different studies with important, nonoverlapping findings. This chapter is concerned with choosing the design and methods that can best answer the researcher's questions. If the methods are not appropriate for the research questions, the researcher might learn some interesting things, but what is learned might be very different from what he or she is trying to study. To organize the challenging process of designing a study, investigators can begin by asking themselves five questions relating to the *why, who, what, when, and how* of the research. In some ways, the "why" is both the beginning and end of the process because it shapes the questions that are asked and the interpretation of data that are collected. The "who" entails deciding what group of people should be studied, such as patients in a clinic, the general population, or rescue workers. The "what" is the construct or constructs to be measured, including posttraumatic stress disorder (PTSD) and other psychiatric disorders, distress, stress, and social support or other resources. The "when" refers to the time frame, the point or points in time at which the constructs should be assessed. The "how" pertains to logistical considerations and to the methods used to collect the data. In the remainder of this chapter, we discuss each of these questions—why, who,

what, when, and how—sequentially. In some ways, this chapter provides a “roadmap” to the rest of this book, and the reader is often referred to other chapters for details on questions, methods, ethical considerations, and special challenges.

WHY

Why is the research being conducted? What does the investigator hope to learn? As in behavioral science generally, the goals of disaster research are to describe, explain, predict, and influence behavior, broadly defined to include thoughts, feelings, and actions. These goals are not necessarily mutually exclusive; that is, one study might achieve multiple scientific goals, but each goal should be considered separately for the purpose of research planning. Table 3.1 provides an overview of the goals and appropriate methods. Regardless of goal, any justification for why a new study should take place must begin with a solid understanding of past research. Lerner (Appendix 2, this volume) provides a useful overview of how to search the literature on disasters and traumatic stress effectively.

Description

Describing Phenomena

The two main categories of descriptive research differ vastly in terms of methodology depending upon whether the researcher aims to describe phenomena or populations. Researchers sometimes aim for “deep description,” a richly detailed account of a phenomenon, such as a particular community’s experience in a disaster. This purpose usually leads one to the realm of qualitative methods. As Palinkas (Chapter 10, this volume) discusses, these methods provide a depth of understanding of an issue or topic that complements the breadth of understanding afforded by quantitative and epidemiological methods. Qualitative descriptive studies often have an exploratory purpose. Exploratory studies are especially important when there is little prior research about a culture, context, construct, or some combination of these variables. Ideally, these studies lead to hypotheses and confirmatory studies down the road.

Describing Populations

Disaster mental health research often aims to describe the prevalence or incidence of psychological disorders in populations afflicted by the disas-

TABLE 3.1. Research Methods by Research Goals

Goal	Requirements and/or approach	See also
Describe phenomenon or community	Qualitative methods	Palinkas (Chapter 10)
Describe population (prevalence/incidence/risk factors)	Epidemiological methods; highly representative samples	Bromet & Havenaar (Chapter 6) Galea et al. (Chapter 7) Schlenger & Silver (Chapter 8)
Describe mental health services/consumers/needs	Mental health services/evaluation research	Rosen & Young (Chapter 12) Galea & Norris (Chapter 11)
Describe/estimate effects of disaster on community or victims	Comparison data, either pre-post or two or more groups who differ only in exposure	Bromet & Havenaar (Chapter 6)
Explain effects; identify mechanisms by which exposure influences mental health	Highly valid and reliable measures; multivariate statistical strategies; adequate representation of severely exposed and impaired persons; sound conceptualization	Benight et al. (Chapter 4)
Predict long-term outcomes or course of postdisaster distress	Longitudinal designs	Benight et al. (Chapter 4) Bromet & Havenaar (Chapter 6)
Influence/change outcomes	Strong interval validity (experimental or quasi-experimental design); highly valid and sensitive measures	Gibson et al. (Chapter 13) Marshall et al. (Chapter 14)
Describe/explain/predict/influence effects in children, rescue/recovery workers, and various understudied populations	Access; trust; measures that are valid and reliable in target population	Bromet & Havenaar (Chapter 6) La Greca (Chapter 9) Steinberg et al. (Chapter 15) Fullerton et al. (Chapter 16) Palinkas (Chapter 10) Jones et al. (Chapter 17) Murphy et al. (Chapter 18)
Provide formal diagnoses	Clinician-administered or structured interviews	
Identify potential or probable cases	Validated screening tools	Galea & Norris (Chapter 11)

ter. Often this purpose is combined with the identification of risk and protective factors, the correlates of postdisaster distress or psychopathology. Typically, such research is undertaken to identify the magnitude or extent of the problem and for whom or where in the community the problem is greatest: How many people of what characteristics have how much of a problem? The extent to which study findings can be generalized from a given sample to the population is critical for research of this type. Descriptive research in nonrepresentative samples has limited value. For describing populations, researchers generally turn to the methods of epidemiology (see Bromet & Havenaar, Chapter 6, this volume; Galea et al., Chapter 7, this volume). In their purest form, descriptive studies aim to describe what *is*, and are not concerned with explaining why the problem exists or even whether the disaster is uniquely responsible for the problem.

Describing Services and Consumers

Another potential goal of disaster research is to describe postdisaster mental health services and users of services. Disaster mental health services research is concerned with describing the availability, reach, utilization, quality, and effectiveness of services in the community. This description may be critical for public mental health planners and providers both to assess extant services and to determine whether or not the available services are meeting the need. Typically, such research considers questions such as: How many people have sought mental health services due to the disaster? Is that number substantially fewer than those who may need mental health services? Are there disparities between subpopulations in the use of services? The validity of answers to questions like these depends upon the study's applicability to a clearly defined population, which could be the general population of an area or the population composed of recipients of mental health services. Therefore, the quality of sampling procedures is very important. In this volume, Galea and Norris (Chapter 11) and Rosen and Young (Chapter 12) further discuss these purposes and approaches. When descriptive in purpose, the research aims only to describe the frequency and correlates of service use. The researcher has not actively intervened, such as in conducting research that aims to influence behavior.

Describing/Estimating Effects of Disasters

Disaster studies rarely have a purely descriptive purpose because they generally aim to show that the disaster influenced the mental health of the afflicted population in some way. Therefore, even if the study professes to have only a descriptive purpose, there is an implicit concern with causality.

Causality is difficult to demonstrate in the absence of comparison data. Comparison or "control" data take two forms.

First, severely exposed groups are sometimes compared with less severely exposed or unexposed groups, and differences between them are attributed to the disaster. Earthquake research provides some good examples where investigators have compared otherwise similar communities that differed in their physical distance from the epicenter. Although comparison groups can be helpful, even the most carefully selected comparison group may have many important preexisting differences from the disaster-affected group, making interpretation of postdisaster differences perilous (North & Pfefferbaum, 2002). Often, researchers draw conclusions about the effects of the disaster not by comparing distinct populations or groups but by conducting "within-sample" analyses, for example, by showing that, as severity of exposure increases, psychological outcomes worsen. Disaster researchers generally rely on statistical controls to supplement their designs and must remain cautious about inferring causality.

A second comparative approach is to include predisaster mental health in the study design, creating a one-group pretest-posttest design. Usually predisaster mental health is assessed retrospectively after the disaster by "lifetime" diagnostic measures that date the onset and recency of symptoms. Importantly, some disaster studies using this method have found high rates of psychopathology that predated the disaster. For example, a study of 1993 Mississippi River flood victims (North, Kawasaki, Spitznagel, & Hong, 2004) found high rates of postdisaster psychopathology, but it turned out this sample of lower-income people who lived on a flood plain because the land was affordable had a high prevalence of psychiatric disorders before the floods. Studies lacking predisaster data might have attributed the prevalence of psychopathology to the floods themselves. Retrospective assessments are imperfect, despite their frequent use, but only occasionally do investigators have access to diagnostic data that are actually collected before the disaster (see Norris & Elrod, Chapter 2, this volume).

Researchers can, and often do, employ both premeasures and comparison groups to strengthen their studies. In such studies, the highly exposed group is generally expected to show more change from before to after the disaster than is the less exposed group. If so, it is reasonable to attribute the effect to the disaster. The problem with this interpretation, however, is that some other factor could be confounded with the disaster—an economic recession, for example—and might account for more alteration of people's mental health status than the disaster itself. Thus, regardless of whether the design has one or more groups with posttest only, one group with pretest and posttest, or two or more groups with pretest and posttest, researchers must always remember to think through the plausible alternatives to their conclusions.

Explanation

Other disaster studies are less concerned with describing populations or phenomena. That disasters influence mental health is conceptually the starting point, and the study is undertaken to explain why or how disasters influence mental health. These studies are concerned about the mechanisms by which stress affects health, be they social, cognitive, or physiological. Often, explanatory questions are expressed in terms of mediating or intervening variables, and these studies typically employ regression methods, such as path analysis or structural equation modeling. Because these studies are focused on testing abstract theories, they do not need to be as concerned as are descriptive studies about generalizability to specific populations, but they must be acutely concerned with construct validity and the quality of measures.

Explanatory studies should aim to ask new and interesting questions (see Benight, McFarlane, & Norris, Chapter 4, this volume). Some systematic replication is helpful in assuring the reliability of previous findings, but testing the identical model repeatedly is of limited value unless there was a theoretically sound rationale for anticipating that the latest test could falsify or expand the theory in a meaningful way.

Prediction

Some disaster studies are undertaken to determine how future outcomes are influenced by earlier conditions. This purpose overlaps with risk factor research, with the key distinction that relations are examined over time: How soon do problems emerge? How long do they last? Who is at risk for chronic problems? Are factors associated with development of psychological disorders the same as those associated with their maintenance? Time, of course, is a critical variable in disaster research that is discussed further under the question of *when*.

Influence

Relatively few postdisaster studies aim to influence behavior (i.e., thoughts, feelings, or actions), but this purpose does subsume intervention and treatment studies. These studies do not simply observe change naturalistically or passively but actively seek to create change. They bear the highest burden of proof, and their designs and measures are judged according to the strictest standards with regard to internal validity. Gibson, Hamblen, Zvolensky, and Vujanovic (Chapter 13, this volume) discuss these standards in more detail and provide useful examples. Intervention studies are generally less concerned with external validity or generalizability, although there is in-

creasing attention to issues of dissemination and transferability (see Marshall, Amsel, Neria, & Suh, Chapter 14, this volume). Treatment and intervention researchers should make sure that they include measures that are sensitive to change and end-state functioning in addition to diagnostic categories.

WHO?

Selecting a population of interest is a fundamental issue driving other parts of the methodology, including but not limited to the sampling plan and sample size. Decisions about whom to study tend to be based on the nature/severity of exposure or characteristics of the survivors, such as ethnicity or age.

Selections Based on Nature/Severity of Exposure

Broadly speaking, populations of interest to disaster research fall into three categories of exposure: (1) communities or general populations composed of people with a variety of exposure levels, often including people who are indirectly exposed as well as directly exposed, (2) selected groups of directly, often severely, exposed disaster victims, and (3) rescue and recovery workers exposed to the disaster by the nature of their work, often in horrific ways.

Communities, Populations, and Schools

For understanding communities or populations, it is critical to consider the nature, level, and variability of participants' exposure to the disaster. Exposure is a multifaceted concept, one that is more complex than is sometimes realized. Disasters may engender an array of stressors, including threat to one's own life and physical integrity, exposure to the dead and dying, bereavement, profound loss, social and community disruption, and ongoing hardship. Effects are not necessarily confined to people who had personal losses (direct or primary victims) but may extend to people who lived in the stricken area but suffered no personal loss or damage (indirect or secondary victims). Researchers need to think through how the direct/indirect distinction will be conceptualized, measured, and analyzed in their particular context.

The issue of indirect consequences has been especially salient in the case of terrorism. Major terrorist events have demonstrated that emotional and psychosocial effects are more far-reaching than was generally recognized. These broader populations lend themselves to different research

questions. Indirectly exposed groups may not provide the kind of data needed for studying the diagnosis of PTSD (discussed in more detail subsequently); however, they may yield important information on distress, attitudes, and behaviors. In chemical, biological, and radiological terrorist attacks, the affected population may not be well defined (Holloway, Norwood, Fullerton, Engel, & Ursano, 1997). Large numbers of people who were not actually exposed may perceive that they were (Salter, 2001), overwhelming the health care system (Ohbu et al., 1997). Therefore, studies of these disasters call for attention to early behaviors, symptoms, and attitudes of broader populations rather than the psychiatric disorders that have been investigated more extensively after conventional terrorist events with explosives and other kinds of disasters.

Victims and Survivors

Much of the research on postdisaster mental health has been conducted with more select groups of individuals who were presumably highly affected. After natural disasters, samples of victims/survivors are often obtained by canvassing badly affected neighborhoods or schools. These samples may be highly representative of disaster victims (an abstract notion, really) but cannot be said to represent an entire geographic area. For example, after Hurricane Andrew, Norris, Perilla, Riad, Kaniasty, and Lavizzo (1999) selected seven badly stricken neighborhoods from which to draw their in-home sample. The data could be used to examine mediators of disaster effects on mental health (an explanatory purpose) but could not be used to estimate the prevalence of psychopathology in Dade County (a descriptive purpose).

It can be difficult to study victims and survivors in some circumstances. After public transportation accidents, for example, survivors often disperse rapidly with no record of their presence. Another obstacle, encountered in airline accidents, is the lack of survivors to participate in research. Studies might instead investigate effects of the disaster on surviving relatives and friends of deceased victims.

The larger the disaster in terms of scope and magnitude, and the greater the emotional and political complexity added by factors such as terrorist elements, the greater may be the barriers to gaining access to potential study participants (North & Smith, 1994). Gatekeepers to portals of access to survivors are understandably highly protective and may shield survivors from contact with would-be researchers. Gatekeepers may be unable to differentiate serious researchers and projects with high potential to make major contributions to human knowledge from frivolous or nuisance proposals portrayed as scientific research. They may fear emotional harm to their constituency or legal liabilities. Disaster research experts have recently considered that this fear may be out of proportion to potential risks

in appropriately and ethically designed and implemented research (see Fleischman, Colloghan, & Tuma, Chapter 5, this volume).

Regardless, such concerns may incite the erection of protective barriers designed to block access to potential research populations. After the Oklahoma City bombing, the state's governor declared that only very selected research groups would be permitted to conduct research on the bombing survivors (Tucker, Pfefferbaum, Vincent, Boehler, & Nixon, 1998). Fears that people might be emotionally upset, "retraumatized," or otherwise mentally damaged by participation in a research study have led to institutional human studies constraints on the conduct of research (Fleischman et al., Chapter 5, this volume). Current rules set forth by the Federal Office for Human Research Protections disallowing direct contact with potential study participants to recruit them from agencies without written consent (Code of Federal Regulations, 2001) seem to be designed with the interest of protecting human subjects, but in fact may make it impossible to achieve representative samples that have been routinely obtained in the past without negative consequences. Such restrictions are proving to be a massive blow to the broader field of epidemiology as well as epidemiological disaster research.

When survivors are difficult to access, researchers sometimes make questionable choices. Convenience (i.e., studying whom one has access to rather than whom one needs to study) is seldom a good basis for conducting important research. College student samples have been used to examine psychological responses to disasters and hypothetical scenarios ("What would you do if . . . ?"). However, findings may be poorly generalizable to actual events, which might elicit entirely different responses than the students can imagine in such hypothetical scenarios. Further, student populations represent narrow demographic groups, and their exposure may not be great enough to draw conclusions about direct mental health effects of a disaster.

Occasionally researchers draw samples of severely affected persons from psychiatric or patient populations. They are a poor source of data on incidence of psychopathology or general phenomenology because of their general nonrepresentativeness, but they are appropriate for treatment studies or for studies of populations with preexisting mental illness. Of course, service recipients and providers are essential to study if the research questions pertain to the reach or quality of disaster mental health services (see Rosen & Young, Chapter 12, this volume).

Rescue/Recovery Workers

A substantial amount of the research on disaster mental health has been focused on the effects of rescue work, body recovery, and similar tasks. Often

these studies do not sample, but attempt to reach all persons who performed a particular function after a disaster. Issues of cause and effect as well as generalizability are especially salient when studying rescue workers because they may differ from direct victims in important ways before the disaster, such as prevalence of alcohol abuse/dependence, experience with trauma situations on the job, and self-selection of individuals for this line of work. Fullerton, McCarroll, and Ursano (Chapter 16, this volume) provide many insights into how to conduct research with this population.

Selections Based on Age, Ethnicity, and Other Survivor Characteristics

Whether selected on the basis of their age (children, older adults), ethnicity, culture, or national origin, special populations of disaster victims require additional attention to issues of access to the population, building trust, and appropriate interviewing procedures. Care must be taken in selecting, translating, or validating measures for the select populations. These issues are discussed further by Jones, Hadder, Carvajal, Chapman, and Alexander (Chapter 17), Steinberg, Brymer, Steinberg, and Pfefferbaum (Chapter 15), and Murphy, Perilla, and Jones (Chapter 18) in the "special challenges" section of this book.

WHAT?

This question refers to decisions about the constructs of interest and how to measure them. The list of possible variables that can be studied is virtually endless, but given the focus of this book, two categories of constructs are of particular concern: mental health and correlates of mental health, such as psychosocial resources.

Mental Health

Few areas generate as much controversy as do researchers' choices of mental health measures. Researchers need to begin by asking whether formal diagnoses are required, whether the identification of probable cases is sufficient, or whether placing people on a continuum of mental health or distress is better for the questions of the study. Continuous measures are often the best choice for explanatory research, but they can be problematic for descriptive studies that aim to estimate prevalence or incidence of disorders. Trade-offs need to be considered.

Diagnostic assessment using accepted criteria for psychiatric disorders can be demanding and laborious. In relatively small samples where a high

prevalence of disorder is anticipated, it may be practical to provide all members with a full diagnostic assessment. Diagnoses are best assessed by using clinician-administered measures, followed by structured diagnostic interviews designed for lay interviewers. Often, however, the time and resources required to fully assess psychiatric diagnoses are prohibitive. Symptom checklists are much easier to apply, especially in difficult settings or to large populations, but one must be circumspect in drawing conclusions about symptoms, which may point to general distress rather than specific psychiatric illness.

Screening tools can offer a reasonable solution to approaching large populations with anticipated disease prevalence rates that are not high enough to warrant blanket application of a time-consuming full diagnostic measure. Brief tools with adequate sensitivity can identify those with greater risk for disorders. If the instrument's specificity is also high enough, its administration may yield a small enough subsample to target for full diagnostic assessment and intervention appropriate to the diagnostic category. Screening tools are not diagnostic instruments and should not be used for diagnosis of any given individual. Individuals who screen positive for increased risk of a disorder on one of these instruments still require a full diagnostic interview for confirmation. Screening tools do not provide precise prevalence rates of disorders after disasters. Large studies that have relied on self-report measures often qualify their findings by drawing conclusions about "probable cases."

The mental health outcome that has been studied most extensively in the aftermath of disasters is PTSD (see Norris & Elrod, Chapter 2, this volume). In directly exposed populations, the incidence of PTSD is higher than that of other psychiatric disorders. Major depression is frequently present or comorbid with PTSD after disasters. Other anxiety disorders such as panic disorder and generalized anxiety disorder may also arise, but less commonly. Although previous studies have described reported changes in substance use patterns in relation to disasters (e.g., Vlahov et al., 2002), there is no evidence to suggest that such reported behavioral changes regularly translate into substance abuse/dependence that was not already preexisting (e.g., North et al., 1999; North & Pfefferbaum, 2002). Schizophrenia, bipolar disorder, somatization disorder, and personality disorder are not among the disorders described as arising regularly after disasters.

Research focusing on PTSD is complicated by its unusual defining feature that includes causality as part of its definition, that is, the requirement of personal exposure or eyewitness to a specific type of traumatic event (one that threatens life or limb) of self or close loved ones. A diagnosis of PTSD presupposes sufficient exposure to a qualifying traumatic event conforming to this definition. Studies of unexposed samples must, by definition, ignore the exposure criterion, instead focusing on the symptom crite-

ria as assessed by measures of intrusion, arousal, and avoidance and numbing symptoms. Interpretation of these symptoms outside the context of exposure requires considerable care.

Correlates of Mental Health

Physical health, health behavior, and a variety of psychosocial variables are of interest to many stress researchers. Although researchers sometimes study physical symptoms or conditions as outcomes of trauma in their own right (Schnurr & Green, 2004), researchers may be specifically interested in medically unexplained symptoms, referred to as somatization. Somatization refers to complaints lacking or in excess of medically explainable pathology or symptoms that are medically or physiologically untenable (North & Guze, 1998). Differentiation of medically explainable from medically unexplained symptoms is not easy and requires review of outside data with medical judgment to fully assess the medical explanation of symptoms.

A variety of psychosocial measures may also be of interest: attitudes such as trust in authorities after terrorist attacks, perceptions of personal safety and fear of future events, and changes in ability to function. Many research goals also require the inclusion of hypothesized protective factors, such as social support, self-efficacy, locus of control, or personality. Regardless of what aspect of disaster is studied, disasters occur within the fabric of people's lives. Therefore, it is vital to find out what was going on with people at the time and what their history is, such as patterns of alcoholism before the disaster, ongoing marital problems, financial problems, prolonged illness and death of an aging parent, context of litigation, or termination of employment. All of these factors could be expected to contribute significantly to the individual's outcome (North, 2004).

Each of these variables (health, social support, concurrent stress, past history) is represented by its own body of work and sets of measures that differ in length, format, and psychometrics. Selection of measures for study questionnaires is sometimes a haphazard or idiosyncratic process, especially when researchers are trying to respond to events rapidly, but the more one knows about a topic, the more one is likely to appreciate nuances in the construct and measures. Social support, for example, can be conceptualized and measured as received support, perceived support, or social embeddedness, and the findings may be very different depending upon this choice (Kaniasty & Norris, 1997). One of the true advantages of proactive disaster research (i.e., a strategy in which one chooses the questions and approaches before a disaster) is the ability it affords to consider the meaning and measurement of each study variable carefully. Whether the approach is proactive or reactive, the breadth of knowledge required to create an expert questionnaire argues for collaboration in disaster research.

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WHEN?

Two key "when" questions must be answered when planning a study: How soon must (or can) the study begin, and how long must (or can) it last? Disasters and their sequelae unfold in a sequential time course with defined phases. Human responses evolve through these different phases, and thus observation at different points in time yield very different pictures. Ideally, participants are assessed at more than one time point, using a longitudinal design so that the influence of time can be taken into account. This is especially important if the "why" is prediction, and questions concern onset, course, duration, and recovery. Only one-third of the studies on disasters have been longitudinal in design, which is one of the shortcomings of the research as a whole (Norris & Elrod, Chapter 2, this volume).

When to Begin?

Beginning disaster research too soon can actually be problematic. Immediately after disaster impact, people are focused on their physical safety and assimilating the unthinkable into their worldview. People are preoccupied with removing themselves from danger, obtaining treatment for injuries, and locating loved ones. Adrenaline is pumping; initial shock and disbelief give way to profound emotions including fear, anger, and grief. Moreover, in the first hours and days after a disaster, virtually all directly exposed individuals are very upset and experience posttraumatic symptoms (North et al., 1999). Postdisaster psychiatric disorders have not had time to fully develop before 2–4 weeks (2 weeks to diagnose major depression and 4 to diagnose PTSD, by DSM-IV definition). These time requirements, incidentally, are intended to avoid inadvertent inclusion of individuals who are so upset in the early period after disaster that their upset may briefly appear indistinguishable from PTSD or depression but are demonstrated by the passage of time not to develop an enduring illness.

During this same time period, people may also be preoccupied with efforts to bury their deceased loved ones, secure shelter, repair damages, and seek resources and compensation. At this time, those so affected by the disaster may find research endeavors to be intrusive and insensitive. Research conducted during this period may be sensitive to these issues by using simple measures creating a light participant burden, although with some sacrifice of methodological integrity.

Despite these challenges, there are a number of good reasons for beginning fieldwork within a few weeks postdisaster. For one thing, data on initial responses are more accurate when collected with minimal delay. Previous research in other areas of psychiatric epidemiology has demonstrated that even normal populations show discrepancy in reporting psychiatric in-

formation in repeated interviews. A well-documented phenomenon in longitudinal follow-up studies is decay in diagnoses derived from reported symptoms from one interview to another over time (North et al., 2004; Rubio-Stipic et al., 1992; Shillington, Cottler, Mager, & Compton, 1995). A certain proportion of individuals who report symptoms meeting criteria for PTSD in the early months after a disaster may fail to disclose the same symptoms retrospectively at follow-up 1 or more years later that had qualified them for the diagnosis at the earlier interview. Studies carried out some time after the disaster may fail to identify some people who had PTSD that would have been detected at an earlier time.

A second good reason for beginning the research soon after the disaster is the ability to answer the predictive questions outlined earlier. Rapid-response research is often (perhaps ideally) combined with a longitudinal design. Interesting information on early predictors of PTSD and other adverse outcomes has emerged from rapid-response studies (e.g., Koopman, Classen, & Spiegel, 1996), although it is often limited by the constraints on the assessment tools that would preclude full diagnostic assessment.

Of course, a number of very good studies did not begin until a year or more after the disaster. What these studies sacrificed in terms of information about the acute impact period was often compensated for by the quality of their measures and the information they provided about the disaster's lingering or long-term effects. There is no single right time to begin a study, but the timing must match the questions (and sometimes the reverse).

When to End?

Longitudinal studies need to plan an end point as well as a beginning point. The proper point at which to end a study is far from universally agreed upon, and it is probably driven more by feasibility than theoretical concerns. It depends upon the severity of the disaster, the extent of ongoing disruption, and the residential stability and cooperativeness of the sample. Nonetheless, a reasonable rule of thumb would be to select, at a minimum, time points that represent the acute period (2–6 months), intermediate period (12–18 months) and long-term period (2–3 years). Only rarely have events been studied long afterward (see Norris & Elrod, Chapter 2, this volume), and there is probably a need for more of these studies after exceptionally serious disasters.

HOW?

The "hows" of disaster research require a blend of expertise on ethics, logistics, and research methods and are the focus of much of this book. Re-

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regardless of why the study is being conducted, who is being studied, or what is being assessed and when, disaster research is complicated by the chaos of the setting. Because disasters cannot be precisely predicted, studies of them must be designed and implemented in a short period of time after the event, a period that may be quite chaotic to research teams local to the affected community. Disaster research may be something these teams never previously thought about, and they need to bring themselves "up to speed" quite quickly. In such cases, finding mentors and experienced researchers with whom to collaborate is often the first and most important pragmatic consideration (Galea et al., 2002). Researchers outside the affected community have their own logistical barriers of geographical distance and lack of pre-existing interpersonal networks to overcome. Resources for new research studies are traditionally not quickly obtained from federal funding agencies, further limiting the scope and complexity that may be achieved. Researchers may prepare in advance by developing a generic research design that can be applied flexibly to specific disaster settings. Funding can be obtained within a few months through NIMH Rapid Assessment Post-Impact of Disaster (RAPID) grants, and even in advance in some cases (Smith, 1996).

CONCLUSIONS

This chapter has explored the art of matching methodological choices to the study's goals, as summarized in Table 3.1. The critical decisions and issues involve finding the right population to fit the research question, choosing the right measure to fit the entity to be investigated, practicing good timing in gathering data, overcoming hurdles specific to disaster research, and interpreting the data given the limitations inherent to disaster research and its challenges. In interpreting disaster mental health data, a cardinal rule is to avoid leaping to conclusions that characteristics observed after a disaster are products of the disaster. The old adage is still true: correlation does not imply causation or causal directionality. Notwithstanding the inherent difficulties of the work, disaster research is important and exciting and, with planning, can be done well. Careful matching of methods to the research goals won't solve all the dilemmas, but it provides a very good start.

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